

What is claimed:

1. An air sterilization system for removing biological contaminants and particulates from ambient air and surfaces in an enclosed space, comprising:
 - 5 compressor means for generating a flow of ambient air through said air sterilization system;
 - filtering means for filtering said flow of ambient air to remove said harmful biological contaminants and particulates from said air to produce filtered air;
 - first ultraviolet means for generating ultraviolet radiation at a first
10 wavelength to destroy harmful biological airborne contaminants and particulates in said filtered flow of ambient air;
 - ozone generator means for converting oxygen from said filtered flow of ambient air into ozone, wherein said ozone destroys said biological contaminants and particulates on said surfaces in said enclosed space; and
15 control means for activating one of said first ultraviolet means and said second ultraviolet means exclusive of the other of said first ultraviolet means and said second ultraviolet means.
2. The air sterilization system of claim 1 wherein said filtering means
20 comprises:
 - electrostatic means for pre-ionizing said filtered air to produce an ionized filtered air; and
 - air filter means for mechanically removing said biological contaminants and particulates from said air.
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3. The air sterilization system of claim 1 wherein said control means comprises:
 - cycle control means for recycling said filtered air through the first
ultraviolet lamp means to destroy excess ozone and newly introduced biological
30 contaminants and particulates in said ambient air and converting said ozone to a highly ionized air.
4. The air sterilization system of claim 1 wherein said first ultraviolet means comprises:

first ultraviolet lamp means operable to generate ultraviolet light at a wavelength of approximately 254.2 nanometers.

5 5. The air sterilization system of claim 1 wherein said ozone generator means comprises:

second ultraviolet lamp means operable to generate ultraviolet light at a wavelength of approximately 185 nanometers.

10 6. The air sterilization system of claim 1 wherein said ozone generator means comprises:

corona discharge means for generating a high voltage electric field to convert oxygen from said filtered flow of ambient air into ozone, wherein said ozone destroys said biological contaminants and particulates on said surfaces in said enclosed space

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7. The air sterilization system of claim 1 wherein said control means comprises:

a motion sensor to deactivate said second ultraviolet means if someone enters the radiant field; and

20 an ozone sensor for determining and controlling the ozone level within said enclosed space.

25 8. A method of operating an air sterilization system for removing biological contaminants and particulates from ambient air and surfaces in an enclosed space, comprising:

generating a flow of ambient air through said air sterilization system;

filtering said flow of ambient air to remove said harmful biological contaminants and particulates from said air to produce filtered air;

30 generating ultraviolet radiation at a first wavelength using a first ultraviolet lamp to destroy harmful biological airborne contaminants and particulates in said filtered flow of ambient air;

converting oxygen from said filtered flow of ambient air into ozone, wherein said ozone destroys said biological contaminants and particulates on said surfaces in said enclosed space; and

activating one of said first ultraviolet lamp and said second ultraviolet lamp exclusive of the other of said first ultraviolet lamp and said second ultraviolet lamp.

5 9. The method of operating an air sterilization system of claim 8 wherein said step of filtering comprises:

pre-ionizing said filtered air to produce an ionized filtered air; and
mechanically removing said biological contaminants and particulates from
said air.

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10. The method of operating an air sterilization system of claim 8 wherein said step of activating comprises:

recycling said filtered air through the first ultraviolet lamp to destroy
excess ozone and newly introduced biological contaminants and particulates in
15 said ambient air and converting said ozone to a highly ionized air.

11. The method of operating an air sterilization system of claim 8 wherein said step of generating ultraviolet radiation at a first wavelength comprises:

20 generating ultraviolet light at a wavelength of approximately 254.2 nanometers.

12. The method of operating an air sterilization system of claim 8 wherein said step of converting oxygen comprises:

25 generating ultraviolet light at a wavelength of approximately 185 nanometers.

13. The method of operating an air sterilization system of claim 8 wherein said step of converting oxygen comprises:

30 generating a high voltage electric field to convert oxygen from said filtered flow of ambient air into ozone, wherein said ozone destroys said biological contaminants and particulates on said surfaces in said enclosed space

14. The method of operating an air sterilization system of claim 8

wherein said step of activating comprises:

deactivating said second ultraviolet lamp if someone enters the radiant field; and

determining and controlling the ozone level within said enclosed space.

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